

WHAT WE CLAIM IS:

1. An imaging system comprising an image pickup device, an image display device for displaying an image thereon, a controller for converting image information
5 obtained from the image pickup device into signals capable of being displayed on the image display device, and a viewing optical system for guiding an image appearing on the image display device to a viewer's eye, wherein:

the viewing optical system comprises, in order from
10 an image display device side, one negative lens element and one positive lens element, and satisfies conditions (1) and (2):

$$0.45 < b/a \quad \dots (1)$$

$$2.3 < d_p/d_n < 7 \quad \dots (2)$$

15 where a is a distance from a display screen of the image display device to a surface of the viewing optical system, which is located nearest to the image display device side, b is an axial length from the surface of the viewing optical system which is located nearest to the image
20 display device side to a surface of the viewing optical system which is located nearest to a viewer side, d_p is a thickness of the positive lens element, and d_n is a thickness of the negative lens element.

2. An imaging system comprising an image pickup
25 device, an image display device for displaying an image thereon, a controller for converting image information obtained from the image pickup device into signals capable of being displayed on the image display device, and a viewing optical system for guiding an image appearing on
30 the image display device to an eye of a viewer, wherein:

the viewing optical system comprises, in order from an image display device side, one negative lens element

and one positive lens element, and satisfies conditions
(1) and (3):

$$0.45 < b/a \quad \dots (1)$$

$$0.3 < d_a/d_n < 1.7 \quad \dots (3)$$

5 where a is a distance from a display screen of the image
display device to a surface of the viewing optical system,
which is located nearest to the image display device side,
b is an axial length of the surface of the viewing optical
10 device side to the surface of the viewing optical system
which is located nearest to a viewer side, d_a is an air
separation between the negative lens element and the
positive lens element, and d_n is a thickness of the
negative lens element.

15 3. The imaging system according to claim 1 or 2,
which further satisfies condition (4):

$$1.0 < a/c \quad \dots (4)$$

where a is the distance from the display screen of the
image display device to the surface of the viewing optical
20 system, which is located nearest to the image display
device side, and c is a length of the viewing optical
system as measured in a short side direction of the
display screen.

25 4. The imaging system according to claim 1 or 2,
which further satisfies condition (5):

$$1.3 < f_e/a < 2.0 \quad \dots (5)$$

where a is the distance from the display screen of the
image display device to the surface of the viewing optical
system, which is located nearest to the image display
30 device side, and f_e is a focal length of the viewing
optical system.

5. The imaging system according to claim 1 or 2,

which further satisfies condition (3-3):

$$0.4 < d_a / d_n < 1.1 \quad \dots (3-3)$$

where d_a is the air separation between the negative lens and the positive lens, and d_n is the thickness of the negative lens.

6. The imaging system according to claim 1 or 2, which further satisfies condition (6):

$$2.0 < r_2 / r_3 < 3.2 \quad \dots (6)$$

where r_2 is an axial radius of curvature of a surface of the negative lens that faces the viewer side, and r_3 is an axial radius of curvature of a surface of the positive lens that faces the image display device side.

7. The imaging system according to claim 1 or 2, wherein the negative lens is a double-concave lens and the positive lens is a double-convex lens.

8. The imaging system according to claim 1 or 2, wherein the negative lens is a double-concave lens and the positive lens is a double-convex lens with satisfaction of condition (3-3):

$$0.4 < d_a / d_n < 1.1 \quad \dots (3-3)$$

where d_a is the air separation between the negative lens and the positive lens, and d_n is the thickness of the negative lens.

9. The imaging system according to claim 1 or 2, which further comprises an image pickup optical system.

10. The imaging system according to claim 1 or 2, which further comprises a stop between the negative lens and the positive lens.

11. An imaging system comprising an image pickup device, an image display device for displaying an image thereon, a controller for converting image information obtained from the image pickup device into signals capable

of being displayed on the image display device and a viewing optical system for guiding an image appearing on the image display device to a viewer's eye, wherein:

the viewing optical system comprises, in order of an
5 image display device side, a negative lens component and a positive lens component, while a stop is located in an air space that contacts the positive lens component.

12. The imaging system according to claim 11,
wherein the stop located in the air space that contacts
10 the positive lens component is an stop interposed between the negative lens component and the positive lens component.

13. The imaging system according to claim 12,
wherein a relation to the positive lens component of an
15 effective radius of the stop interposed between the negative lens component and the positive lens component satisfies at least either one of conditions (7) and (8):

$$0.05 < (Y_{bL} - Y_{aL}) / z_L < 0.4 \quad \dots (7)$$

$$0.05 < (Y_{bS} - Y_{aS}) / z_S < 0.4 \quad \dots (8)$$

20 where z_L is an axial distance from a stop surface to an end of an exit surface of the positive lens component as measured on a section including an optical axis in a long side direction, Y_{aL} is an effective radius of the stop as measured on the section in the long side direction, Y_{bL} is
25 a distance from the optical axis to the end of the exit surface of the positive lens component as measured on the section in the long side direction, z_S is an axial distance from the stop surface to the end of the exit surface of the positive lens component as measured on a
30 section including the optical axis in the short side direction, Y_{aS} is an effective radius of the stop as measured on the section in the short side direction, and

YbS is a distance from the optical axis to the end of the exit surface of the positive lens component as measured on the section in the short side direction.

14. The imaging system according to claim 11,
5 wherein the negative lens component is of double-concave shape and the positive lens component is of double-convex shape.

15. The imaging system according to claim 11,
wherein the stop is of substantially rectangular shape
10 substantially similar to that of the image display device.